ASSIGNMENT-4

WOKWI AND IBM CLOUD

Assignment Date	17 November 2022
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Student Roll Number	311419106033
Maximum Marks	2 Marks

QUESTION-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever the distance is less than 100 cms sent "alert" to IBM cloud and display in device recent events.

AIM:

To write code and connections in wokwi for ultrasonic sensor. Whenever the distance is less than 100 cms sent "alert" to IBM cloud and display in device recent events.

CODE:

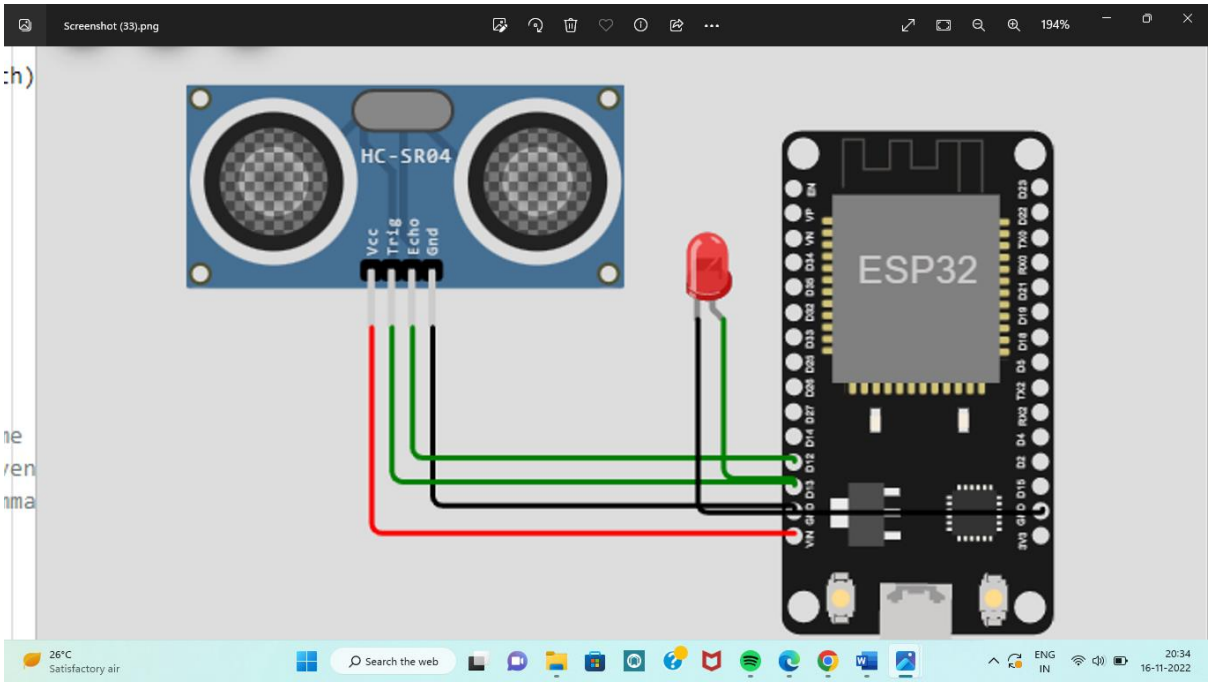
```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for mqtt

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);

//-------credentials of IBM Accounts------/

#define ORG "yh90tb"
#define DEVICE_TYPE "Childsafetygadget"
#define DEVICE_ID "Vaishu"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "x0c@AgIjh-np)yj_j7"     //Token
String data3;
float dist;
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name
```

```
char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of
event perform and format in which data to be send
char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd  REPRESENT
command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id

WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);

int LED = 15;
int trig = 13;
int echo = 12;
void setup()
{
Serial.begin(115200);
pinMode(trig,OUTPUT);
pinMode(echo,INPUT);
pinMode(LED, OUTPUT);
delay(10);
wificonnect();
mqttconnect();
}
void loop()// Recursive Function
{

digitalWrite(trig,LOW);
digitalWrite(trig,HIGH);
delayMicroseconds(10);
digitalWrite(trig,LOW);
float dur = pulseIn(echo,HIGH);
float dist = (dur * 0.0343)/2;
Serial.print ("dist in cm");
Serial.println(dist);

PublishData(dist);
delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}


void PublishData(float dist) {
  mqttconnect();
  String object;
  if (dist <100)
  {
    digitalWrite(LED,HIGH);
    Serial.println("object is near");
    object = "Near";
```

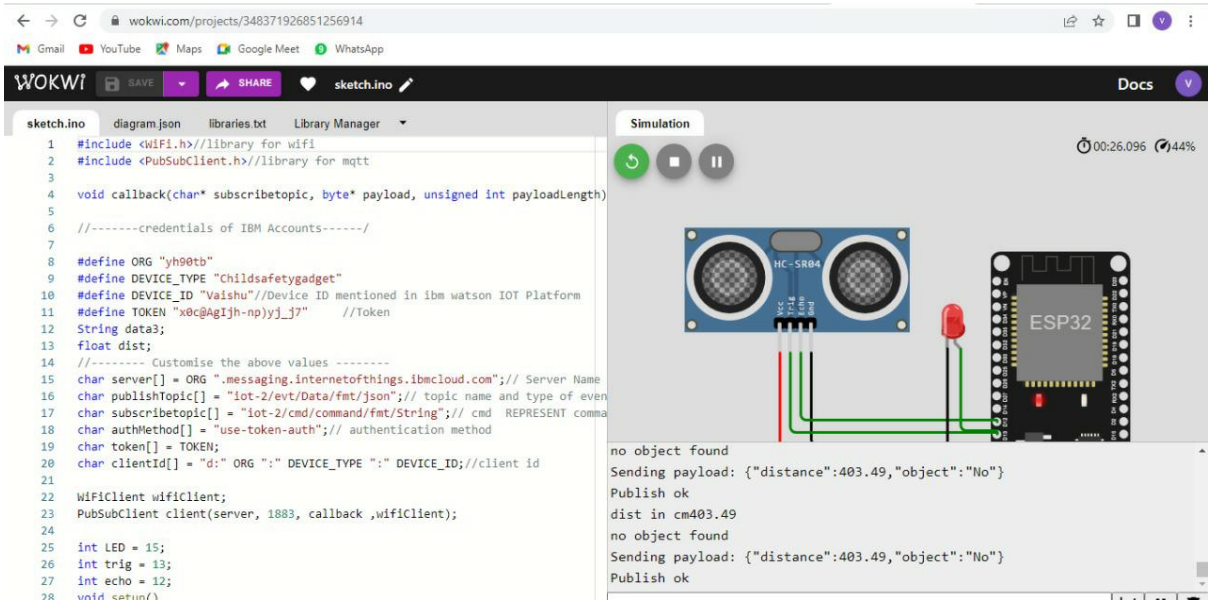
```
  }
  else
  {
    digitalWrite(LED,LOW);
    Serial.println("no object found");
    object = "No";
  }

  String payload = "{\"distance\":";
  payload += dist;
  payload += "," "\"object\":\"";
  payload += object;
  payload += "\"}";


  Serial.print("Sending payload: ");
  Serial.println(payload);




  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud
then it will print publish ok in Serial monitor or else it will print publish
failed
  } else {
    Serial.println("Publish failed");
  }

}
void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
    }

     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish
the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
```

```
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

void initManagedDevice() {
  if (client.subscribe(subscribetopic)) {
    Serial.println((subscribetopic));
    Serial.println("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{

  Serial.print("callback invoked for topic: ");
  Serial.println(subscribetopic);
  for (int i = 0; i < payloadLength; i++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }
  //   Serial.println("data: "+ data3);
//   if(data3=="Near")
//   {
// Serial.println(data3);
// digitalWrite(LED,HIGH);

//   }

//   else
//   {
// Serial.println(data3);
// digitalWrite(LED,LOW);

//   }
data3="";


}
```

CONNECTIONS:

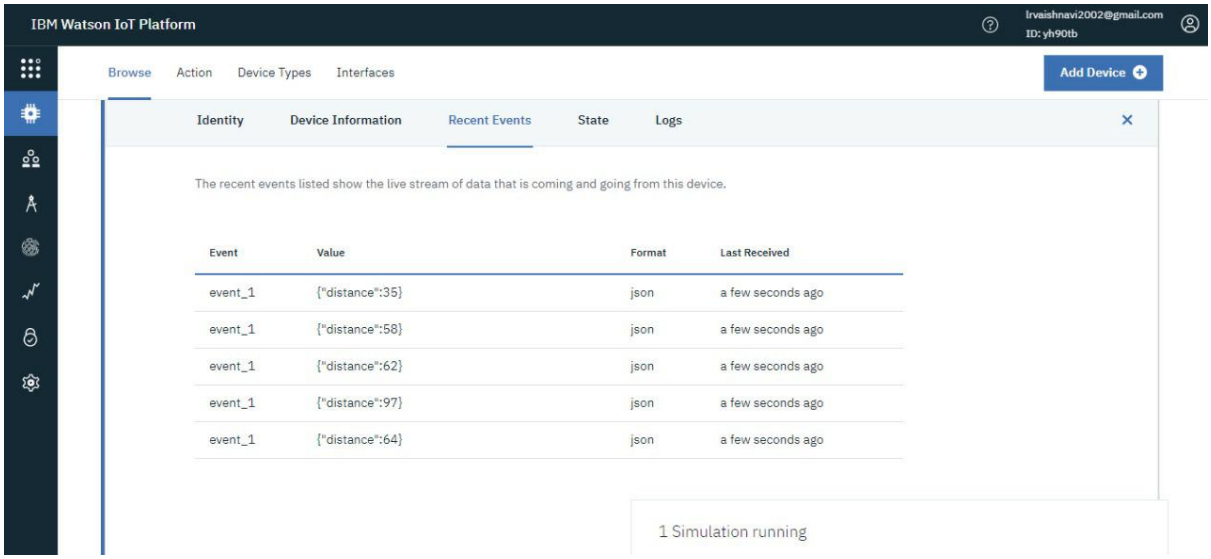


OUTPUT(WOKWI):



LINK: https://wokwi.com/projects/348371926851256914

OUTPUT (IBM CLOUD):


IBM Watson IoT Platform
lrvaishnavi2002@gmail.com
ID: yh90tb
Browse
Action
Device Types
Interfaces
Add Device
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
event_1
{"distance":35}
json
a few seconds ago
event_1
{"distance":58}
json
a few seconds ago
event_1
{"distance":62}
json
a few seconds ago
event_1
{"distance":97}
json
a few seconds ago
event_1
{"distance":64}
json
a few seconds ago
1 Simulation running